FUJI ELECTRIC

1MB 08-120

IGBT
1200 V
8 A

Fuji Discrete Package IGBT

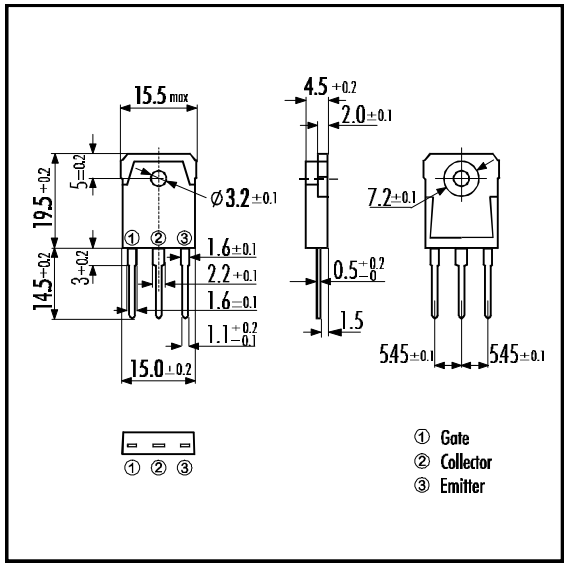
■ Features

- *Square RBSOA*
- *Low Saturation Voltage*
- *Less Total Power Dissipation*
- *Minimized Internal Stray Inductance*

■ Applications

- *High Power Switching*
- *A.C. Motor Controls*
- *D.C. Motor Controls*
- *Uninterruptible Power Supply*

■ Outline Drawing

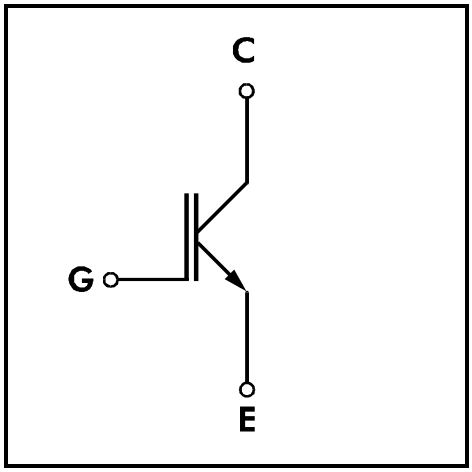


■ Maximum Ratings and Characteristics

• Absolute Maximum Ratings (T_c=25°C)

Items		Symbols	Ratings	Units
Collector-Emitter Voltage		V_{CES}	1200	V
Gate -Emitter Voltage		V_{GES}	± 20	V
Collector Current	DC T_c= 25°C	$I_{C\ 25}$	13	A
	DC T_c=100°C	$I_{C\ 100}$	8	
	1ms T_c= 25°C	$I_{C\ PULSE}$	39	
IGBT Max. Power Dissipation		P_C	115	W
Operating Temperature		T_j	+150	°C
Storage Temperature		T_{stg}	-40 ~ +150	°C
Mounting Screw Torque			50	Nm

■ Equivalent Circuit



• Electrical Characteristics (at T_j=25°C)

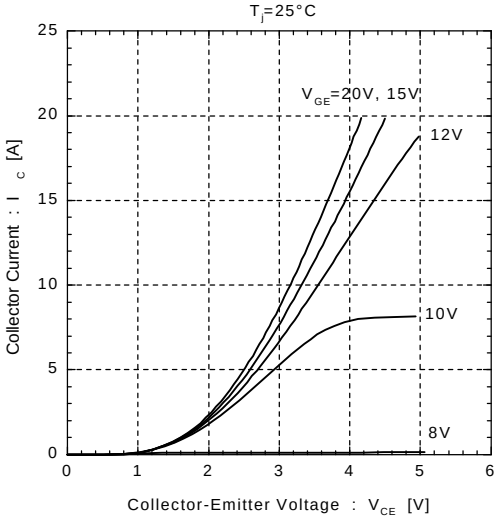
Items		Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current		I_{CES}	V_{GE}=0V V_{CE}=1200V			1.0	mA
Gate-Emitter Leackage Current		I_{GES}	V_{CE}=0V V_{GE}=± 20V			20	µA
Gate-Emitter Threshold Voltage		$V_{GE(th)}$	V_{GE}=20V I_C=8mA	5.5		8.5	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	V_{GE}=15V I_C=8A			3.5	
Input capacitance		C_{ies}	V_{GE}=0V		1000		pF
Output capacitance		C_{oes}	V_{CE}=10V		160		
Reverse Transfer capacitance		C_{res}	f=1MHz		60		
Switching Time	Turn-on Time	t_{ON}	V_{CC}=600V			1.2	µs
		t_r	I_C=8A			0.6	
	Turn-off Time	t_{OFF}	V_{GE}=±15V			1.5	
		t_f	R_G=200Ω			0.5	
	Turn-on Time	t_{ON}	V_{CC}=600V		0.16		µs
		t_r	I_C=8A		0.11		
	Turn-off Time	t_{OFF}	V_{GE}=+15V		0.30		
		t_f	R_G=20Ω			0.5	

• Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th(j-c)}$				1.08	

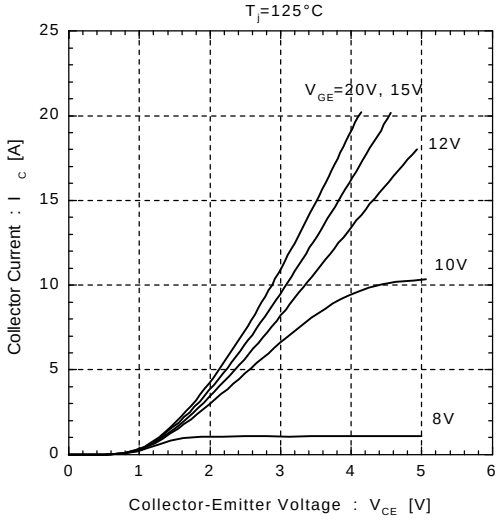
Collector Current vs. Collector-Emitter Voltage

T_j=25°C



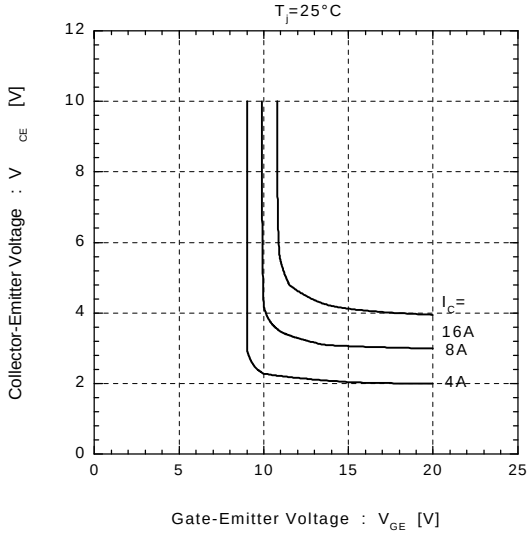
Collector Current vs. Collector-Emitter Voltage

T_j=125°C



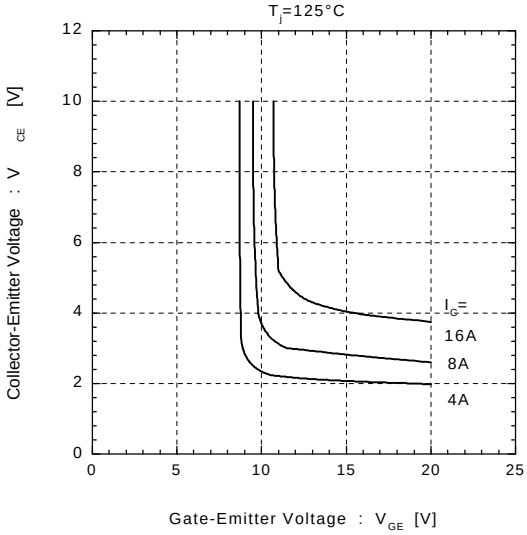
Collector-Emitter Voltage vs. Gate-Emitter Voltage

T_j=25°C



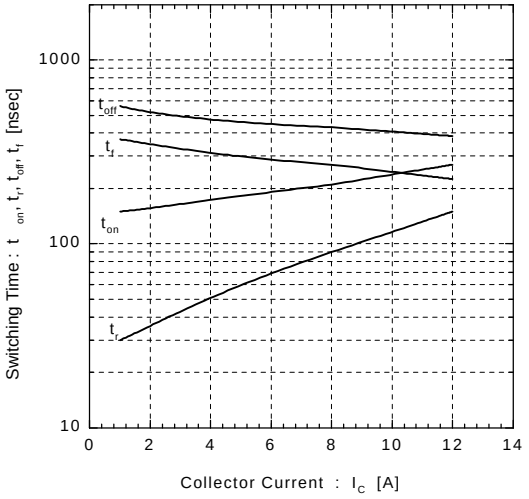
Collector-Emitter Voltage vs. Gate-Emitter Voltage

T_j=125°C



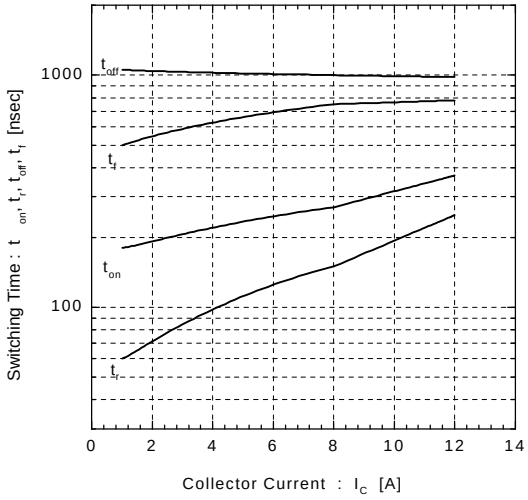
Switching Time vs. Collector Current

V_{CC}=600V, R_G=20Ω, V_{GE}=±15V, T_j=25°C



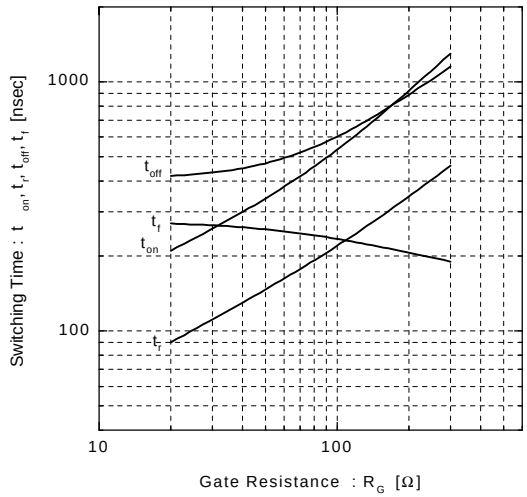
Switching Time vs. Collector Current

V_{CC}=600V, R_G=20Ω, V_{GE}=±15V, T_j=125°C



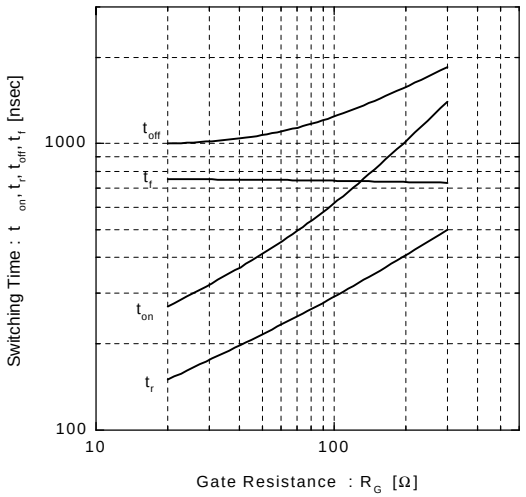
Switching Time vs. R_G

V_{CC}=600V, I_C=8A, V_{GE}=±15V, T_j=25°C



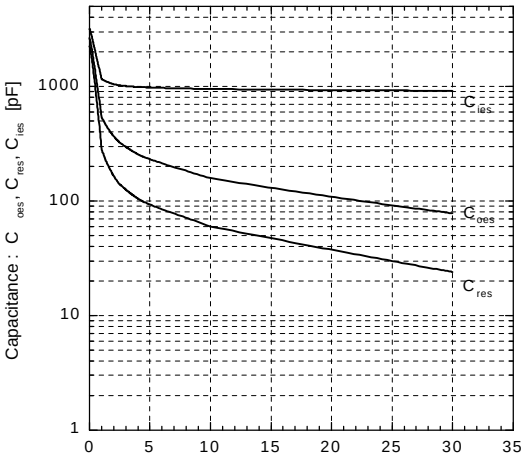
Switching Time vs. R_G

V_{CC}=600V, I_C=8A, V_{GE}=±15V, T_j=125°C



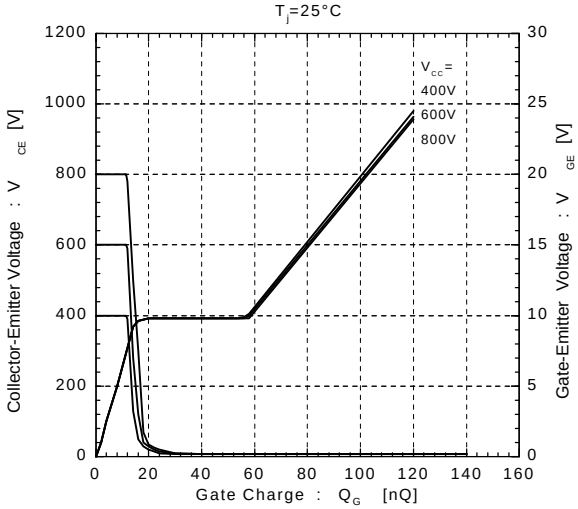
Capacitance vs. Collector-Emitter Voltage

T_j=25°C



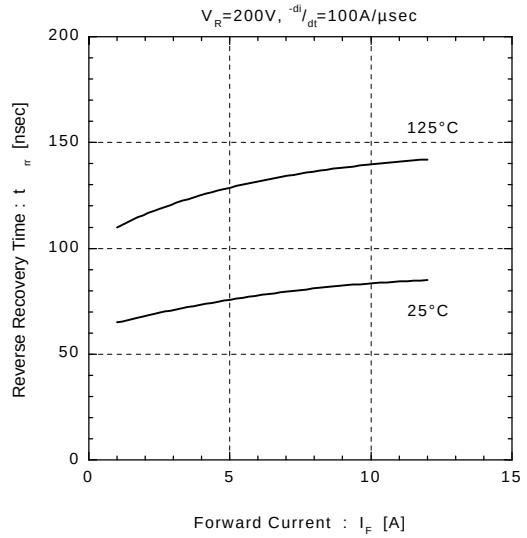
Dynamic Input Characteristics

T_j=25°C



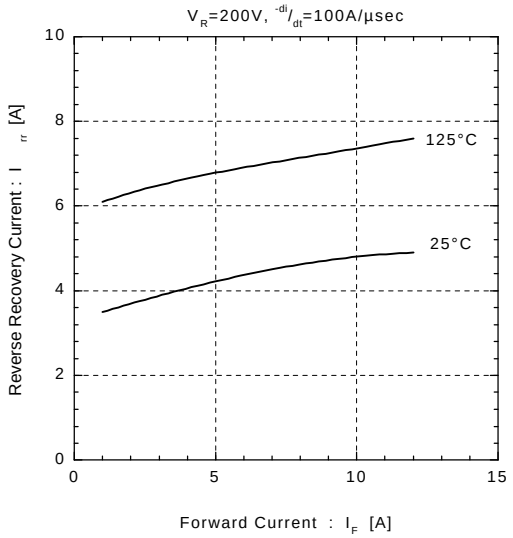
Reverse Recovery Time vs. Forward Current

V_R=200V, $-di/dt$=100A/µsec



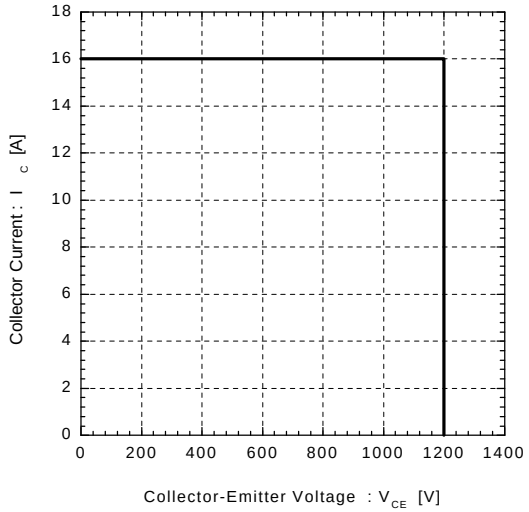
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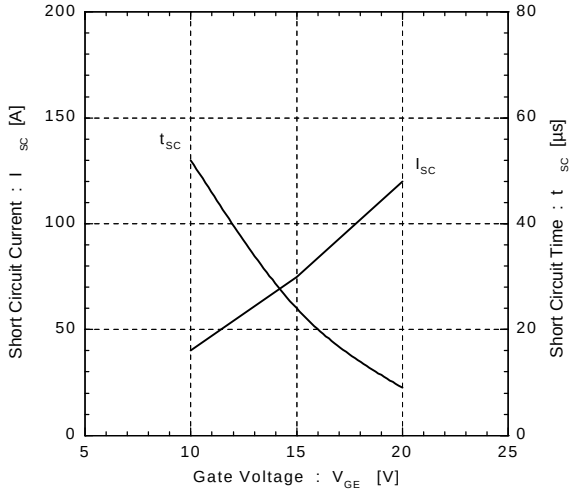
Reverse Biased Safe Operating Area

$+V_{GE}$=15V, $-V_{GE}$≤15V, T_j≤125°C, R_G≥20Ω

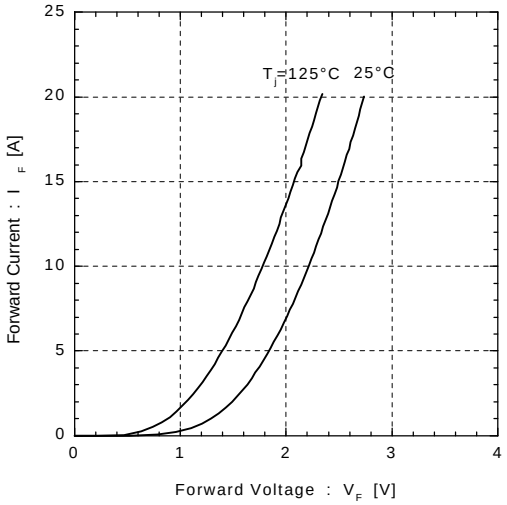


Typical Short Circuit Capability

V_{CC}=800V, R_G=20Ω, T_j=125°C

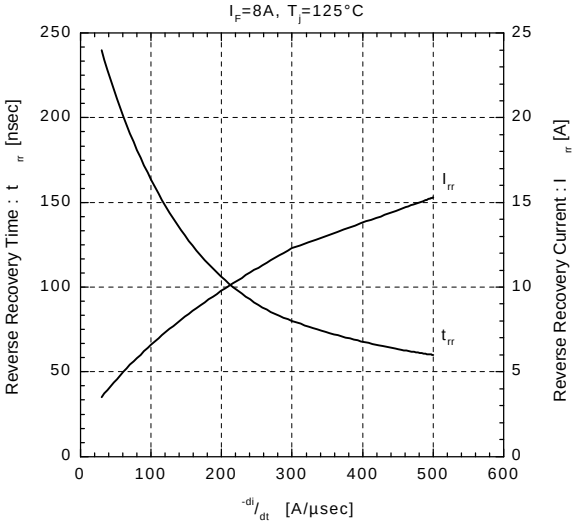


Forward Voltage vs. Forward Current



Reverse Recovery Characteristics vs. $-di/dt$

I_F=8A, T_j=125°C



Transient Thermal Resistance

